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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/509,433 05/30/00 MILLS

R P-3002.1

EXAMINER

MMC2/0523

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NEGRON, I

ART UNIT

PAPER NUMBER

2875

DATE MAILED:

05/23/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.

09/509,433

Applicant(s)

MILLS ET AL.

Examiner

Ismael Negron

Art Unit

2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19 and 30 is/are allowed.
- 6) ☒ Claim(s) 1-18 and 20-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 5/30/00 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Title*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: **Optical Irradiation Device LED and Optic Fibers.**

### *Drawings*

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "**44**" has been used to designate both "*lead frames*" (page 8, line 20), "*negative lead frame*" (page 9, line 6) and "*positive lead frame*" (page 9, line 7). Also note the following:

- reference character "**41**", used to designate "*guide*" (page 9, line 11) and "*adiabatic tapered light guide*" (page 10, line 6);
- reference character "**43**", used to designate "*LED's*" (page 6, line 2) and "*LED cluster*" (page 10, line 6);
- reference character "**46**", used to designate "*waisted section*" (page 10, line 26) and "*main body*" (page 14, line 6); and
- reference character "**55**", used to designate "*heat conducting tubes*" (page 14, line 24) and "*inner wall*" (page 15, line 9).

The applicant is advised that the reference characters must be properly applied, with no single reference character being used for two different parts or for a given part and a modification of such part. See MPEP §608.01(g). Correction is required.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "43" has been used to designate different parts in different embodiments. See Figures 4-6. Correction is required. Also note the following:

- reference character "41" in Figures 4-6 and 8; and
- reference character "61" in Figure 7.

4. Applicant is further advised that this action only exemplifies the objections to the drawings, applicant's cooperation is requested in correcting all the occurrences of the cited, or any other errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 21 is indefinite as it is dependent upon itself.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-15, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belfer (U.S. Pat. 5,875,645).

Belfer discloses an optical irradiation device having:

- **an array of light sources clustered together so that they emit radiation into a beam, Figure 1, reference number 12;**
- **each light source having a modifier formed with multiple facets such that facets of adjacent modifiers adjoin one another in close proximity throughout their length, Figure 2, reference number 14;**
- **the faces of adjacent modifiers extending substantially parallel to one another, Figure 2;**
- **the faces of adjacent modifiers abutting one another, Figure 2;**
- **the modifiers being arranged in a ring, Figure 2;**
- **the modifiers being arranged in concentric rings, Figure 2;**
- **the modifiers having an hexagonal shape, Figure 2;**
- **the facets of the modifiers being polished, inherent;**

- **the facets having a reflective coating**, column 2, lines 8-21;
- **each light source being provided with a light guide**, columns 1 and 2, lines 66-67 and 1-7, respectively; and
- **the light guides consisting of individual fibbers bundled together**, Figure 2.

Belfer discloses all the limitations of the claims, except the light sources being LED.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an LED as the light source of the device of Belfer since the examiner takes official notice that the advantages of LED over other light sources (i.e. reduced size, high efficiency, low power consumption, long life, resistance to vibrations, low heat production) are old and well known in the illumination art.

6. Claims 16 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belfer (U.S. Pat. 5,875,645) in view of Kennedy (U.S. Pat. 5,420,768).

Belfer discloses an optical irradiation device having:

- **an array of light sources clustered together so that they emit radiation into a beam**, Figure 1, reference number 12; and
- **each light source having a modifier formed with multiple facets such that facets of adjacent modifiers adjoin one another in close proximity throughout their length**, Figure 2, reference number 14.

Belfer discloses, or suggests, all the limitations of the claims, except the light guide having an index that varies from one part to another to manipulate the light.

Kennedy discloses an irradiation device having LED as the light source and a light guide with a varying index to manipulate light emitted by the LED (Figure 2, reference number 17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combined the teachings of Belfer and Kennedy to obtain a device such as the one disclosed by Kennedy with an enhanced light radiation output, as per the teachings of Belfer (column 1, lines 15-22)

7. Claims 21-27 and 29 rejected under 35 U.S.C. 103(a) as being unpatentable over Belfer (U.S. Pat. 5,875,645) in view of Kennedy (U.S. Pat. 5,420,768) as applied to claim 1 above, and further in view of state of the prior art.

The combined teachings of Belfer and Kennedy teach all the limitations of the claims, except a heat management system having heat pipes, a cooling fluid and channels to conduct such cooling fluid.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a heat management system in the apparatus of Belfer and Kennedy since the examiner takes official notice that such heat management system in combination with optic waveguides are old and well known in the illumination art (see Relevant Prior Art section of this Office Action).

***Allowable Subject Matter***

8. Claims 19 and 30 are allowed.
9. Since allowable subject matter has been indicated, applicant is encouraged to submit formal drawings in response to this Office Action. The early submission of formal drawings will permit the Office to review the drawings for acceptability and to resolve any informalities remaining therein before the application is passed to issue. This will avoid possible delays in the issue process.
10. The following is a statement of reasons for the indication of allowable subject matter:

Applicant teaches an irradiation device having:

- light emitting diodes (LED);
- a tapered light guide to collect radiation emitted by the LED;
- two or more tapered light guides being arranged in series so that successive guides receive radiation from preceding guides;
- an LED or a group of LED being provided at the input end of each guide;
- a tapered light guide having an intermediate region of minimum diameter in which a bend is formed.

No prior art was found disclosing individually nor teaching in combination all of the features of the applicants' invention.



***Relevant Prior Art***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

**Hugelshofer** (U. S. Pat. 3,681,592), **Miller et al.** (U.S. Pat. 5,099,399 and 5,967,653) and **Kuth** (U.S. Pat. 5,664,864) discloses heat management systems for fiber optic illuminator.

**Kaufman et al.** (U.S. Pat. 3,327,712) and **Gonser** (U.S. Pat. 4,385,344) disclose fiber optic illumination devices.

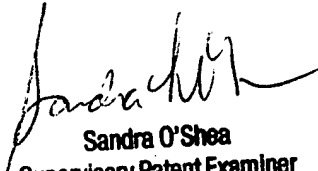
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**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ismael Negron whose telephone number is (703) 308-6086. The examiner can normally be reached on Monday-Friday from 8:30 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra L. O'Shea, can be reached on (703) 305-4939. The facsimile machine number for the Art Group is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

  
Sandra O'Shea  
Supervisory Patent Examiner  
Technology Center 2800

Inr

May 17, 2001